

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/06843

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B21C23/14 B21C25/08 B22F3/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B21C B22F B29C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2 422 994 A (TAYLOR GEORGE F) 24 June 1947 (1947-06-24) column 1, line 49 -column 2, line 10; figures	1,7-9
A	US 6 248 277 B1 (FRIEDRICHS KONRAD) 19 June 2001 (2001-06-19) column 5, line 46 -column 6, line 8 column 6, line 50 - line 61 column 7, line 4 - line 16 column 7, line 37 - line 49 column 8, line 5 - line 9; figures	1-7
A	US 5 780 063 A (FRIEDRICHS ARNO) 14 July 1998 (1998-07-14) claim 1; figures	1,10,11



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

16 September 2003

Date of mailing of the international search report

23/09/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Barrow, J

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/EP 03/06843

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3 396 676 A (MARK HASTEN ET AL) 13 August 1968 (1968-08-13) column 3, line 20 - line 54; figures -----	1-4
A	PATENT ABSTRACTS OF JAPAN vol. 013, no. 418 (M-871), 18 September 1989 (1989-09-18) - & JP 01 156405 A (SUMITOMO ELECTRIC IND LTD; OTHERS: 01), 20 June 1989 (1989-06-20) abstract; figure 4 -----	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 03/06843

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2422994	A	24-06-1947	NONE	
US 6248277	B1	19-06-2001	DE 19644447 A1 AT 214317 T DE 29624253 U1 DE 59706644 D1 WO 9818587 A2 EP 1017527 A1 HK 1027774 A1 JP 2002514138 T	30-04-1998 15-03-2002 20-09-2001 18-04-2002 07-05-1998 12-07-2000 23-08-2002 14-05-2002
US 5780063	A	14-07-1998	DE 4021383 A1 DE 4120165 A1 US 5601857 A US 5904939 A AT 111383 T DE 59102911 D1 DK 465946 T3 EP 0465946 A1 ES 2060253 T3 JP 3245429 B2 JP 6256808 A	16-01-1992 24-12-1992 11-02-1997 18-05-1999 15-09-1994 20-10-1994 27-03-1995 15-01-1992 16-11-1994 15-01-2002 13-09-1994
US 3396676	A	13-08-1968	GB 1178727 A	21-01-1970
JP 01156405	A	20-06-1989	JP 1679048 C JP 3044121 B	13-07-1992 05-07-1991